REMARKS/DISCUSSION OF ISSUES

Claims 1-7 and 9-20 are pending in the application. Claims 1-7 and 9-20 are rejected. Claim 3, 4, 6 and 9-11 are currently amended to delete multiple dependencies.

Claims 1-5, 9, 10, 12-14 and 18

Claims 1-5, 9, 10, 12-14 and 18 are rejected under 35 USC 103(a) as being unpatentable over Uehara et al. (US 4,772,885) (herein 'Uehara') in view of Stewart et al. (US 5,337,068) (herein 'Stewart').

Claims 1, 13 and 14

Regarding claims 1, 13 and 14, Uehara discloses a liquid crystal color display device which includes a liquid crystal image-generating unit (35) and an illumination unit (41) which may be combined with a color filter (63). In the embodiment of Figs. 3 and 4, the light of the illumination unit is generated using electroluminescent materials.

The color filter 63 is used to produce color images of good color balance through adjustments to the hues or dominant wavelengths, the saturations, the purities and the brightnesses of the colors R, G, B of the light-emitting pixel layer elements. See col. 4, lines 53-65.

Uehara does not disclose the use of LEDs as light-generating elements, nor does Uehara disclose driving at least three light-generating elements to separately control the intensity of light emitted by at least one of the elements, and thereby change a color temperature and illumination level of a

picture to be displayed by the display device, as called for by claims 1, 13 and 14.

Moreover, Uehara does not teach varying the intensity of light emitted by the light-emitting diodes in response to an illumination level of the picture to be displayed by the display device, as called for by claims 1, 13 and 14.

Stewart discloses a field-sequential display system with a back-lit LCD image panel. The LCD image panel is backlit by a bank of red, green and blue fluorescent lamps.

In a field-sequential display system, a full color display is created by sequentially flashing red, green and blue components of the full color image at a frequency which causes the perception by the viewer of a merging of the sequential color components into a full color image.

This field-sequential display is backlit by flashing red, green and blue components of the backlight synchronously with the flashing of the red, green and blue image components, so that a full color backlit display is produced without degradation of the color purity of the image.

Stewart also discloses changing the duty cycle of the fluorescent lamps to momentarily highlight or dim the display, or to change the relative duty cycles of the red, green and blue lamps to change the color balance of the display. Stewart also discloses adjusting the flash duration of individual lamps to correct for intensity and color nonuniformities. See col. 9, lines 35-47.

Stewart also discloses the use of alternate light sources, such as cathodoluminescent or electroluminescent sources. See col. 13, lines 30 and 31.

However, Stewart does not disclose LEDs, nor driving at least three LEDs to separately control the intensity of light

emitted by at least one of the LEDs, and thereby change a color temperature and illumination level of a picture to be displayed by the display device, as called for by claim 1.

Moreover, Stewart does not teach varying the intensity of light emitted by the light-emitting diodes in response to an illumination level of the picture to be displayed by the display device, as called for by claims 1, 13 and 14.

The Examiner has stated that it would have been obvious to add individual control of LEDs as taught by Stewart to the display device of Uehare in order to allow for dynamic color balancing.

However, Stewart does not teach dynamic color balancing, that is, Stewart does not teach varying either the duty cycle or the flash duration of the lamps in response to an illumination level of the picture to be displayed, as called for by claims 1, 13 and 14.

Moreover, since Uehara's system is not a field-sequential system, Stewart's teaching of changing the duty cycle or flash duration of the lamps would not be applicable to Uehara's system. That is, Uehara relies on a matrix of intermixed red, green and blue pixels to produce a full color image, not on the sequential flashing of red, green and blue fields. Thus, Uehara relies on the spatial integration of red, green and blue pixels by the viewer, while Stewart relies on the temporal integration of red, green and blue fields by the viewer.

Thus, Uehara uses a backlight which is constantly on, illuminating the LCD panel with a uniform level of illumination, whereas Stewart's backlight is flashing on and off synchronously with the flashing on and off of the component color fields.

Thus, Stewart's methods of varying the duty cycle and flash duration are simply inapplicable to Uehara's system, and the skilled artisan would not be led to make the modification urged by the Examiner.

In response to Applicant's previous argument that the references fail to teach "changing a color temperature and illumination level of a picture to be displayed by the display device, wherein an intensity of light emitted by the light-emitting diodes varies in response to an illumination level of the picture", the Examiner has responded that Stewart clearly teaches that backlights can be adjusted according to the illumination level of the picture.

However, Stewart does not teach varying the intensity of the light-emitting units, as called for by claim 1. In fact, the intensity of the fluorescent lamps cannot be varied. A fluorescent lamp is either on or off. Thus, only the duty cycle and flash duration of such a lamp can be varied.

A unique characteristic of LEDs is that their intensities can be individually varied simply by varying the current to the LEDs, enabling more control over the quality of illumination than a system having light-generating units with on/off capability, such as the fluorescent lamps used by Stewart.

Claims 2-4

Regarding claims 2-4, both Uehara and Stewart disclose the use of electroluminescent materials, but neither reference teaches or suggests the use of LEDs as the light-generating units.

Claim 5

Regarding claim 5, neither reference teaches or suggests the use of LEDs as light-generating units, nor the claimed relationship.

Claims 9 and 10

Regarding claims 9 and 10, neither reference teaches that the intensity of the LED can be adjusted on a frame-to-frame basis. As already stated, neither reference teaches or suggests the use of LEDs as light-generating units, nor adjusting the intensity of any light-generating unit.

Claims 6, 7, 11, 15-17, 19 and 20

Claims 6, 7, 11, 15-17, 19 and 20 are rejected under 35 USC 103(a) as being unpatentable over Uehara and Stewart as applied above, and further in view of Applicant's admitted prior art (AAPA).

Claims 6 and 7

Regarding claims 6 and 7, the Examiner relies on Applicant's admitted prior art (p. 3, paras. [0036] and [0037]) to show that such characteristics are well known.

However, Applicant can find no statement in the admitted prior art regarding specific values of bandwidth of LEDs. If the Examiner is referring to EP0915363, cited on page 2 of the specification, Applicant could find no statement therein regarding the spectral bandwidth of LEDs. Even if such a

statement exists, claims 6 and 7 are patentable by virtue of their dependency.

Claim 11

Regarding claim 11, Applicant can find no statement in the admitted prior art regarding specific values of lumens of LEDs. If the Examiner is referring to EP0915363, Applicant could find no statement therein regarding lumen values of LEDs. Even if such a statement exists, claim 11 is patentable by virtue of its dependency.

Claims 15-17, 19 and 20

Regarding claims 15-17, 19 and 20, the Examiner has stated that it would have been obvious to use any of the known standards in the devices of Uehara and Stewart in order to broaden their marketability.

However, Applicant is not claiming to use any of the known standards, but rather is claiming that the illumination system is operable to tune the light-emitting diodes such that the display device displays each of the pictures in accordance with the standardized color triangle of the emission standard associated with each of the pictures. (claim 16)

This concept is not embodied in the mere knowledge that different standards exist, nor would it have been obvious in view of this knowledge to provide a system capable of displaying pictures according to different standards. This capability is possible only because Applicant's illumination system is dynamically tunable, and this capability is due to the ability to independently control the intensities of the

individual LEDs.

In order for a combination of references to succeed in a rejection under section 103, at least one of the references must contain a suggestion which would motivate the skilled artisan to make the substitution which would result in the invention. In the present case, the mere knowledge of different standards is insufficient to motivate the skilled artisan to modify either Stewart or Uehare to arrive at the claimed structure.

It is only with the aid of hindsight gained from Applicant's own teachings that the invention can be appreciated, and such hindsight is not permitted in judging obviousness under section 103.

In view of the above arguments and amendments, Applicant respectfully requests that the Examiner withdraw the rejections of record, allow all the pending claims, and find the application to be in condition for allowance.

Respectfully submitted,

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